AMENDMENTS TO THE CLAIMS:

This listing of the claims will replace all prior versions, and listings, of the claims in this application.

Claims 2-12, 15-17, 20-24, 40, 59 and 62-65 were previously canceled without prejudice or disclaimer.

Claims 27, 28, 46 and 47 are canceled herein without prejudice or disclaimer.

Listing of Claims:

1. (Currently Amended) A method, comprising:

receiving a composite wireless communication signal by a receiver;

de-rotating a corresponding complex composite base band received signal;

splitting ~~a~~ the de-rotated corresponding complex composite base band received signal into an inphase domain portion and a quadrature domain portion, where de-rotating and splitting yield modulation formats comprising binary, inphase domain and quadrature domain data streams; and

performing, on the split corresponding complex composite base band received signal, joint signal detection separately in inphase domain and quadrature domain, where the joint signal detection comprises performing pre-filtering and reduced state sequence estimation separately on the inphase domain portion and the quadrature domain portion, where the composite wireless communication signal comprises a desired signal and an interfering signal, where the joint signal detection operates to suppress interference from the interfering signal.

2-12. (Canceled)

13. (Previously Presented) A system according to claim 18, in which said base station transmits two transmission signals on a same channel.

14. (Previously Presented) A system according to claim 13, in which said two transmission signals comprise two GMSK signals, two 8pSK signals or one GMSK signal and one 8PSK

signal.

15-17. (Canceled)

18. (Currently Amended) A wireless transmission system comprising:

at least one base station having at least two spatially separated antennas and at least one RF unit configured to transmit a GMSK signal or an 8PSK signal along each of said two spatially separated antennas; and

at least one receiving station configured to communicate with said base station;

where said at least one receiving station comprises means for receiving a composite wireless communication signal, means for de-rotating a corresponding complex composite base band received signal, means for splitting ~~a~~ the corresponding complex composite base band received signal into an inphase domain portion and a quadrature domain portion and means for performing, on the split corresponding complex composite base band received signal, joint signal detection separately in inphase domain and quadrature domain, where the means for de-rotating and the means for splitting yield modulation formats comprising binary, inphase domain and quadrature domain data streams, where the means for performing joint signal detection is further for performing pre-filtering and reduced state sequence estimation separately on the inphase domain portion and the quadrature domain portion, where the composite wireless communication signal comprises a desired signal and an interfering signal, where the joint signal detection operates to suppress interference from the interfering signal.

19. (Currently Amended) A wireless transmission system comprising:

at least one base station having at least one antenna and at least one RF unit configured to transmit a GMSK signal or an 8PSK signal; and

at least one receiving station configured to communicate with said base station;

where said receiving station comprises means for receiving a composite wireless communication signal, means for de-rotating a corresponding complex composite base band received signal, means for splitting ~~a~~ the corresponding complex composite base band received signal into an inphase domain portion and a quadrature domain portion and means for

performing, on the split corresponding complex composite base band received signal, joint signal detection separately in inphase domain and quadrature domain, where the means for de-rotating and the means for splitting yield modulation formats comprising binary, inphase domain and quadrature domain data streams, where the means for performing joint signal detection is further for performing pre-filtering and reduced state sequence estimation separately on the inphase domain portion and the quadrature domain portion, where the composite wireless communication signal comprises a desired signal and an interfering signal, where the joint signal detection operates to suppress interference from the interfering signal.

20-24. (Canceled)

25. (Currently Amended) The method of claim 1, where the corresponding complex composite base band received signal is comprised of real modulation signals, complex modulation signals or a combination of real and complex modulation signals, where the real modulation signal is a GMSK signal, ~~the method further comprising~~ where de-rotating comprises de-rotating the corresponding complex composite base band received signal in complex space such that the GMSK signal is binary modulated.

26. (Currently Amended) The method of claim 1, where the corresponding complex composite base band received signal comprises at least one GMSK signal, ~~the method further comprising~~ where de-rotating comprises de-rotating the corresponding complex composite base band received signal with a factor $e^{-j\phi_k}$ such that the at least one GMSK signal is forced to be binary modulated.

27. (Canceled)

28. (Canceled)

29. (Previously Presented) The method of claim 1, where pre-filtering comprises using a set of feed forward weights to minimize an error term that includes a MIMO feedback filter, wherein a

feed forward filter separately filters the inphase domain portion and the quadrature domain portion.

30. (Previously Presented) The method of claim 29, where pre-filtering comprises optimizing filter coefficients according to a minimum mean square error (MMSE) criterion.

31. (Previously Presented) The method of claim 1, where reduced state sequence estimation comprises use of a reduced state soft output sequence estimation that employs a branch metric comprised of inphase domain and quadrature domain components of the corresponding complex composite base band received signal.

32. (Previously Presented) The method of claim 1, where said steps of receiving, splitting and performing are performed in an 8PSK blind I-Q interference suppression receiver when a GMSK interferer is present.

33. (Previously Presented) The method of claim 1, where said steps of receiving, splitting and performing are performed in a GMSK-8PSK or 8PSK-GMSK I-Q MIMO minimum mean square error (MMSE) joint detection receiver.

34. (Previously Presented) The method of claim 1, where said steps of receiving, splitting and performing are performed in an 8PSK-8PSK I-Q MIMO minimum mean square error (MMSE) receiver that jointly detects at least two 8PSK signals and rejects residual GMSK interference using I-Q whitening.

35. (Previously Presented) The method of claim 1, where said steps of receiving, splitting and performing are performed in a GMSK-GMSK I-Q MIMO minimum mean square error (MMSE) receiver that jointly detects at least two GMSK signals and rejects residual GMSK plus 8PSK interference using I-Q whitening.

36. (Previously Presented) The method of claim 1, further comprising sequentially estimating

desired and dominant interfering signal channel impulse responses, where channel estimation blindly identifies a dominant interferer modulation type and its training sequence.

37. (Previously Presented) The method of claim 36, where modulation identification comprises use of $e^{j\pi k/2}$, $e^{j3\pi k/8}$ constellation rotations associated with GMSK and 8PSK modulations, respectively, and where training sequence identification comprises use of an estimation metric over a plurality of possible interference training sequence pairs.

38. (Previously Presented) The method of claim 36, where identifying the dominant interferer modulation type and training sequence comprises searching through known training sequences, and analyzing residual signals to identify a type of dominant interference.

39. (Previously Presented) The method of claim 1 further comprising, sequentially estimating interfering modulation type and training sequence, and performing a maximum likelihood joint channel estimate after all modulation types and training sequences are estimated.

40. (Canceled)

41. (Previously Presented) The method of claim 1, further comprising detecting whether operation of the device is in a first mode in which the interfering signal is to be discarded or in a second mode in which the desired signal and the interfering signal are to be processed as data, where in the first mode the interfering signal is discarded.

42. (Currently Amended) A device comprising:

a receiver configured to receive a composite wireless communication signal; and

a processor configured to de-rotate a corresponding complex composite base band received signal, to split ~~a~~ the corresponding complex composite base band received signal into an inphase domain portion and a quadrature domain portion and to perform, on the split corresponding complex base band received signal, joint signal detection separately in inphase domain and quadrature domain, where de-rotating and splitting the corresponding complex

composite base band signal by the processor yield modulation formats comprising binary, real and imaginary data streams, where the joint signal detection comprises performing pre-filtering and reduced state sequence estimation separately on the inphase domain portion and the quadrature domain portion, where the composite wireless communication signal comprises a desired signal and an interfering signal, where the joint signal detection operates to suppress interference from the interfering signal.

43. (Previously Presented) The device of claim 42, where said receiver is coupled to a plurality of receive antennas.

44. (Currently Amended) The device of claim 42, where the corresponding complex composite base band received signal is comprised of real modulation signals, complex modulation signals or a combination of real and complex modulation signals, where the real modulation signal is a GMSK signal, and where ~~said processor is further configured to~~ de-rotating the corresponding complex composite base band received signal comprises ~~rotate~~ de-rotating the corresponding complex composite base band received signal in complex space with a factor such that the GMSK signal is binary modulated.

45. (Currently Amended) The device of claim 42, where the corresponding complex composite base band received signal comprises at least one GMSK signal, and where ~~said processor is further configured to~~ de-rotating the corresponding complex composite base band received signal comprises ~~de-rotate~~ de-rotating the corresponding complex composite base band received signal with a factor $e^{-j\phi_k}$ such that the at least one GMSK signal is forced to be binary modulated.

46. (Canceled)

47. (Canceled)

48. (Previously Presented) The device of claim 42, where performing pre-filtering by said processor comprises using a set of feed forward weights to minimize an error term that includes a

MIMO feedback filter.

49. (Previously Presented) The device of claim 48, where performing pre-filtering by said processor comprises optimizing filter coefficients according to a minimum mean square error (MMSE) criterion.

50. (Previously Presented) The device of claim 42, where performing reduced state sequence estimation by the processor comprises performing a reduced state soft output sequence estimation procedure using a branch metric comprised of inphase domain and quadrature domain components of the corresponding complex composite base band received signal.

51. (Previously Presented) The device of claim 42, where said receiver and said processor are configured as an 8PSK blind I-Q interference suppression receiver when a GMSK interferer is present.

52. (Previously Presented) The device of claim 42, where said receiver and said processor are configured as a GMSK-8PSK or 8PSK-GMSK I-Q MIMO minimum mean square error (MMSE) joint detection receiver.

53. (Previously Presented) The device of claim 42, where said receiver and said processor are configured as an 8PSK-8PSK I-Q MIMO minimum mean square error (MMSE) receiver operable to jointly detect at least two 8PSK signals and to reject residual GMSK interference using I-Q whitening.

54. (Previously Presented) The device of claim 42, where said receiver and said processor are configured as a GMSK-GMSK I-Q MIMO minimum mean square error (MMSE) receiver operable to jointly detect at least two two GMSK signals and to reject residual GMSK interference using I-Q whitening.

55. (Previously Presented) The device of claim 42, where said processor is further configured to

sequentially estimate desired and dominant interfering signal channel impulse responses, where channel estimation blindly identifies a dominant interferer modulation type and its training sequence.

56. (Previously Presented) The device of claim 55, where modulation type identification comprises use of $e^{j\pi k/2}$, $e^{j3\pi k/8}$ constellation rotations associated with GMSK and 8PSK modulations, respectively, and where training sequence identification comprises use of an estimation metric over a plurality of possible interference training sequence pairs.

57. (Previously Presented) The device of claim 55, where said processor is configured to identify the dominant interferer modulation type and training sequence using a search through known training sequences, and an analysis of residual signals to identify a type of dominant interference.

58. (Previously Presented) The device of claim 42, where said processor is further configured to sequentially estimate interfering modulation type and training sequence, and to perform a maximum likelihood joint channel estimate after all modulation types and training sequences are estimated.

59. (Canceled)

60. (Previously Presented) The device of claim 68, where in the first mode the interfering signal is discarded.

61. (Previously Presented) A system according to claim 18, in which two transmission signals are transmitted by a same base station using two antennas or are transmitted by a plurality of base stations each using one antenna.

62-65. (Canceled)

66. (Previously Presented) The device of claim 42, where the composite wireless communication

signal is received by the receiver from each of at least two spatially separated transmit antennas associated with at least one transmitter or from at least two transmitters.

67. (Previously Presented) The device of claim 66, where the receiver receives desired information from each of the at least two spatially separated transmit antennas.

68. (Previously Presented) The device of claim 67, where the processor is further configured to detect whether operation of the device is in a first mode in which the interfering signal is to be discarded or in a second mode in which the desired signal and the interfering signal are to be processed as data.

69. (Previously Presented) The device of claim 42, where the composite wireless communication signal comprises two signals that are received on a same channel and where the two signals comprise two GMSK signals, two 8PSK signals or one GMSK signal and one 8PSK signal.

70. (Previously Presented) The device of claim 42, where the processor is further configured to estimate channel parameters of the interfering signal by calculating channel parameters for all combinations of a desired signal and of said interfering signal and selecting the channel parameters that meet a criterion.

71. (Previously Presented) The device of claim 42, where the receiver is further configured to receive channel parameters of an interfering signal.